

## CHAPTER 8

### GENERAL DISCUSSION

During the course of the present studies I have collected fairly detailed quantitative data on the distribution, abundance, habitat use, diet, calling behaviour and threats of the Satyr Tragopan in the Singhalila National Park. As this is the first detailed work on the Satyr Tragopan in the wild it will benefit future studies aimed at any particular aspects of ecology or behaviour of the species.

Review of the global distribution of Satyr Tragopan showed that except for Garhwal the species was well distributed in all its historically reported areas (Jerdon 1853, Beebe 1918-1922, Meinertzhagen 1926, Whistler 1928, Inglis 1933). Additional sites have also been located in Arunachal Pradesh and China. Many surveys were conducted in the post-independence era in the Himalaya and these have enabled many specific sites in particular areas/regions to be identified. There was paucity of information from sites in Garhwal although the western limit of Satyr Tragopan has always been accepted as Garhwal since historical times. Prasad (1993) suggested Tons river catchment in Garhwal a site of Satyr distribution based on the reports and information provided by the local people. The distribution of the species across Kumaun region was fairly well documented and the Munshiari area in Pithoragarh district of Uttar Pradesh is a newly recorded site (Shah *et al.* 1998). There is still very little or no information on the presence of Satyr Tragopan from the extreme western part of Nepal although the distribution is expected to be continuous. From the west - central part of Nepal through Darjeeling, Sikkim, Bhutan and

western Arunachal Pradesh the distribution of the species is continuous. Recent reports of the Satyr Tragopan from the southeastern parts of China (Zheng Guang-mei 1992, Xian 1995, Ma Shilai *et al.* 1996) has expanded the range of the species to farther eastern limits by nearly 7° eastwards. Reports of the Satyr Tragopan from China, however are not very convincing because the nature of evidence is not stated in any of them. The range of the Temmick's Tragopan also seems to have increased further west by location of new sites (Singh 1998). Hitherto Dafla Hills in East Kameng district of Arunachal Pradesh was considered to be the dividing line between Satyr Tragopan and the Temmick's Tragopan. This leaves a wide gap in the distribution of the Satyr Tragopan from East Kameng through Myanmar to the reported site of distribution of the species in China whereas the Temmick's seems to have a continuous distribution in this area (Kaul *et al.* 1992). Therefore the presence of an isolated pocket of distribution of Satyr Tragopan in southeastern China requires further verification.

In the Singhalila National Park the Satyr Tragopan was well distributed and most abundant in the 2600-3300 m altitude zone in oak dominated mixed forests. Relative density figures of the Satyr Tragopan obtained for the Gairibans-Kainyakatta-Kalpokhri area of the Singhalila National Park were quite consistent in the three years of study. As already mentioned elsewhere in the text it would be too premature to make any predictions in the population trend of the species in the area from just three year's observation. Among sites within the Park the species was distributed in more or less a continuous fashion from Gairibans through Sandakphu to Phalut Molley regions and was probably contiguous with Sikkim. Ringal bamboo was the most dominant understorey throughout its range in the study area. The Satyr Tragopan were also found to be

distributed in alpine forests, pure rhododendron stands, pure bamboo stands and sometimes in plantation forests but the most preferred broad habitat seemed to be the oak dominated mixed forests. Through most seasons of the year the habitat of the Satyr Tragopan remained associated with vegetation structure present at the understorey and ground level. Among the tree variables the species was mainly associated with the tree canopy cover only, perhaps because it affects the vegetation structure at the understorey or ground level. There was however a distinct seasonal separation in habitat use of the species. During pre-monsoon the habitat comprised of open areas with dense shrub and ground cover, in monsoon the birds inhabited wooded areas with closed canopy and understorey cover, in the autumn or post-monsoon the birds were associated with dense and closed cover both at the canopy and understorey level and in winter the habitat comprised of open areas with dense ground cover. As the results showed there was not much of a separation between the animal and the random plots at the microhabitat level. This was probably as mentioned before because of the random plots not being truly random since their locations were determined by the location of the animal plots. Therefore some of the random plots during sampling may have at some other occasion fallen on animal plots also.

Satyr Tragopan was found to be more vegetarian with *Arundinaria maling* and ground cover vegetation forming the bulk of the diet. Even among these *A. maling* was by far the most predominantly encountered food item in the diet of the species. Besides vegetative matter grit or quartz fragments also formed a fairly important diet of the species. Being a predominantly, ground dwelling species it is expected that the habitat of the Satyr Tragopan remains associated with vegetation structure at the shrub and ground level

which probably provide the vital food and cover required by the bird for survival. Calling period occurs in the premonsoon season and is associated with open canopy and dense understorey and ground cover habitat which probably provides perpetual food, cover for the easily detectable calling or pairing birds and open area for proper transmission of calls. Vegetation at the understorey and ground level is also expected to protect the brightly coloured conspicuous male during this season because it indulges in advertising and displaying to the female. Late premonsoon and early monsoon times are important for the birds as they are involved in nesting activities like laying, incubation and hatching. Birds are vulnerable to predation and egg loss during this period and also require easily available food. This is probably best provided by the dense shrub and ground cover prevalent in their habitat. In the post-monsoon season when the broods are raised the understorey and ground cover maintain their importance and this goes on to the harsh winter when for survival the understorey cover and ground cover provide the shelter and thermal cover to the Satyr Tragopan.

There are a number of human settlements lying scattered in the fringe area of the Singhalila National Park. Some of the possible threats to the forests due to human activities were livestock grazing and browsing, lopping of trees for fuelwood and construction, harvesting of bamboo, poaching and unmonitored movement of people and cattle within the forest of the National Park. In the Satyr Tragopan habitat however grazing and browsing were recorded in only a few plots and in greater percentage of the plots there was no disturbance from livestock. This activity of livestock was further determined by the distance of the habitat from the human habitation as all disturbance activities reduced in intensity with distance from the settlements. Lopping (harvesting of

bamboo stems) was identified as the most widespread disruptive activity in the habitat of the Satyr Tragopan. Since the habitat of the species remains associated with understorey vegetation and bamboo forms the most dominant understorey cover of the Singhalila forests intensive harvesting of this plant will lead to habitat destruction of the species which is expected to have a wide range of repercussions on the Satyr Tragopan population in the Singhalila National Park.

There are certain aspects of the Satyr Tragopan ecology and behaviour that are still not known or the information available is very sketchy and requires a large amount of research. Some of these are acoustical analysis, nesting ecology, breeding behaviour (territoriality, mate attraction, display, mating, laying, incubation and hatching), population dynamics, home range and further detailed studies on diet and energetics. Many of the areas along its range of distribution need to be surveyed for confirmed sites of current distribution. These include Garhwal, western Nepal and Himalayan region of central and eastern Arunachal Pradesh.